

Deep reefs unlikely to save shallow coral reefs

February 15 2017



A variety of corals form an outcrop on Flynn Reef, part of the Great Barrier Reef near Cairns, Queensland, Australia. Credit: Toby Hudson/Wikipedia

Dr Pim Bongaerts, a Research Fellow at The University of Queensland's Global Change Institute (GCI) and ARC Centre of Excellence for Coral Reef Studies, and lead author of the study, said deep reefs share coral species with the shallow reef, which has led to the idea that deep reefs

could be an important source of larvae and help to 'reseed' shallow reefs.

"We argue that this concept of deep coral populations 'reseeding' their shallow-water counterparts may be relevant to some species, but is ultimately unlikely to aid more broadly in the recovery of shallow reefs," he said.

Given the impossibility of tracking the movements of individual coral larvae on the reef, understanding the 'connectivity' between shallow and deep coral populations relies on methods that assess the genetic similarity between [coral populations](#).

The team focused on the relatively isolated reef system of Bermuda in the Western Atlantic where they screened the genomes of more than 200 individual coral colonies from shallow and deep water, belonging to two [coral species](#) with similar depth distributions on the reef.

The study demonstrates that the extent of 'connectivity' between shallow and deep populations can differ greatly between species on a reef, and can be strongly affected by natural selection processes that vary across shallow and deep reef environments.

Director of GCI, and co-author, Professor Ove Hoegh-Guldberg said deep coral reefs had been highlighted as holding hope for shallow reefs that were badly damaged by bleaching events.

"Our results, however, contribute to a growing body of evidence, that the role of deep reefs in shallow-reef recovery is likely to be very limited," he said.

According to Dr Bongaerts, the study once again highlights that under the increasing disturbances that [coral](#) reefs continue to face, they are unlikely to just 'sort themselves out'.

"Instead, the responsibility for their future lies with us. If we want to have any chance of preserving these unique and diverse ecosystems, it is crucial that we start curbing our emissions and divest from fossil fuels," he said.

The research is published in *Science Advances*.

More information: "Deep reefs are not universal refuges: Reseeding potential varies among coral species," *Science Advances*, advances.sciencemag.org/content/3/2/e1602373

Provided by University of Queensland

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